



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference PG 06007WO | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/EP2003/010249 | International filing date (day/month/year) 15 September 2003 (15.09.2003) | Priority date (day/month/year) 13 September 2002 (13.09.2002) |
| International Patent Classification (IPC) or national classification and IPC B60T 10/02 | | |
| Applicant VOITH TURBO GMBH & CO. KG | | |

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 7 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

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|--|--|
| Date of submission of the demand 16 March 2004 (16.03.2004) | Date of completion of this report 18 August 2004 (18.08.2004) |
| Name and mailing address of the IPEA/EP | Authorized officer |
| Facsimile No. | Telephone No. |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/010249

I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed

☒ the description:

pages 3-12, as originally filed
 pages _____, filed with the demand
 pages 1, 2, 2a, filed with the letter of 21 June 2004 (21.06.2004)

☒ the claims:

pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages 1-17, filed with the letter of 21 June 2004 (21.06.2004)

☒ the drawings:

pages 1/4-4/4, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/10249

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|------|-----|
| Novelty (N) | Claims | 1-17 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | 1-17 | YES |
| | Claims | | NO |
| Industrial applicability (IA) | Claims | 1-17 | YES |
| | Claims | | NO |

2. Citations and explanations

Reference is made to the following documents:

- D1: US-A-3 924 713
- D2: US-B-6 223 7181
- D3: EP-B-0 885 351
- D4: EP-B-0 932 539
- D5: WO 98/35171 A
- D6: WO 98/15725 A
- D7: EP-A-0 716 966.

Novelty and inventive step

1. Document D1 is considered to be the prior art closest to the subject matter of claim 1. Said document discloses (the references between parentheses relate to D1):

a drive unit in a vehicle that has a vehicle cooling circuit, said drive unit comprising:

a hydrodynamic retarder (1) with a rotor impeller and a stator impeller, the hydrodynamic retarder (1) being arranged in the cooling circuit and the working medium of the retarder being the cooling medium.

/...

1.1 The subject matter of claim 1 therefore differs from the retarder known from D1 in that:

the retarder (1) comprises means (6, 26) for drawing off residual liquid against the external pressure built up by the cooling system in non-braking mode.

1.2 Thus, the subject matter of claim 1 is novel (PCT Article 33(2)).

The **problem** addressed by the present problem can consequently be regarded as that of reducing the high degree of power loss in known retarders when in non-braking mode.

2.1 For the following reasons, the **solution** to this problem, as proposed in claim 1 of the present application, involves an inventive step (PCT Article 33(3)):

the closest prior art (D1) discloses a device for drawing off the gaseous volume from within the retarder working chamber in order that the retarder can be filled more quickly; the withdrawal of the residual liquid is not proposed nor would it be possible to withdraw the residual fluid in D1 in non-braking mode (column 6, lines 21-23).

3. Claims 2-17 are dependent on claim 1 and thus likewise meet the requirements of the PCT in respect of novelty and inventive step.

Industrial applicability

4. The invention can be used in the vehicle industry.